A NEW DIATOM.

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Chætoceros elmorei n. sp. Plate X.

Prof. C. J. Elmore, of Grand Island College, Nebraska, sent me recently a slide containing a form of *Chætoceros*. On first examination, the species appeared to resemble *C. wighamii* Br. On receipt, however, of material which was subjected to a closer examination, I have concluded that the species is new. The material had been dried upon blotting paper and it was necessary to soak it for a long while to secure filaments of the proper size, it being impossible, of course, to resort to the proper methods of cleaning. The character of the chromatophores is not known. I have, however, succeeded in mounting a number of slides which show quite clearly the structure of the valves and spores.

All species of the genus *Chætoceros* have heretofore been considered as marine, and have not been found inland except in the Caspian Sea. The species about to be described is found in Devils Lake, North Dakota.

It may be of interest to give a brief description of the locality from the *Second* and the *Sixth Biennial Reports of the State Geological Survey of North Dakota*, of the years 1903 and 1912, respectively. In the *Report* for 1903, from an article by Mr. E. J. Babcock, *Water Resources of the Devils Lake Region* (p. 208), and also from an article by Mr. Howard E. Simpson, *The Physiography of the Devils-Stump Lake Region*, in the *Report* for 1912 (p. 105), the following information is obtained:

Devils Lake is in Lat. 48° N., Long. 99° W. It is a glacial lake and "occupies a basin formed largely by morainic ridges." Its length is "about twenty-four miles, and the width averages, perhaps, between four and seven miles." It lies at an elevation of about fourteen hundred feet, and its greatest depth is not more than twenty-nine feet. No streams of any size enter the lake, its chief source of supply being the annual rainfall from the surrounding ridges, and it has no outlet. Although originally a large fresh-water lake, it is now much reduced in size, and its waters "may be termed alkaline and brackish, since they show a salinity of about

one per cent., of which magnesium and sodium salts constitute a considerable portion."

The following is the diagnosis of the form:

Filaments straight, 23μ wide.

Cells rectangular with sharp angles; valves slightly convex; foramina narrowly linear, irregular, bipartite.

Setæ straight, hollow, approaching each other at an acute angle and crossing at a right angle near the corners of the valves, about ten times the length of the valve. In valve view they diverge from each other at an angle of about 80°.

Terminal setæ shorter than the others, somewhat curved in the direction of the filament.

Spores with the primary valve arcuate, secondary valve produced into a subconical frustum. Rarely in free spores the primary valve is covered with minute spines.

The valves are joined together near one side by a tubular commissure, from six-tenths to eight-tenths of a *micron* in thickness, situated near the edge of the valve, usually at unequal distances from each end, and, so far as noticed, is found near the margin on the same side of all valves in the filament.

The presence of the connecting tube and the unusual locality combine to render this form a unique species, which I take pleasure in naming after Prof. Elmore.

An examination of fig. II, *i* and *k*, in Plate III, in Schütt's article (*Ueber die Diatomeengattung Chætoceros, Bot. Zeitung*, 1888) offers an interesting suggestion as to the origin of the commissure. In the genus *Thalassiosira* the cells are connected by mucilaginous threads which are central. In the present species of *Chætoceros* the commissure is eccentric and appears to be tubular. In *C. simile* the valves touch each other, and in several species, such as *compactum*, the centre of the valve is produced or considerably elevated, but in no previously described form has the union of the frustules been consummated, except by the interlacing of the awns.

The other diatoms sparingly found in the waters of the lake include species of *Fragilaria, Gomphonema, Epithemia*, and *Surirella*. Owing to the presence of great quantities of small crustacea, the material is mounted with difficulty.

Explanation of Plate X.

Fig. 1.—A short filament consisting of seven cells. The filaments usually contain twenty or more cells. In filaments showing the spores, the width is quite constant, but in vegetative cells the width varies considerably, many of them being much wider.

Fig. 2 shows the accidental separation of two adjacent cells and the division of the commissure.

Fig. 3 is a diagrammatic representation of the position of the commissure near one side of the cell. The valves are frequently in close contact in the middle, making the foramen bipartite.

Fig. 4.—Represents the usual position of the commissure, although the distance from the edge of the valve is somewhat variable. Sometimes the commissure is in the middle of the side, but more frequently nearer one end.

Fig. 5 is a valve view of the secondary valve as seen in the cell.

Fig. 6 shows a form rarely found of a free spore much more developed than the others and having the surface of the primary valve partly covered with spines, somewhat as in *C. wighamii* Br. Specimens of the latter in my collection, however, show spores which are smaller, more circular, and with the surface more evenly covered with spines.

Fig. 7 represents two adjacent cells, as frequently seen, containing spores with their secondary valves opposed.

The figures represent a magnification of 1,200 diameters.[1]

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[1] I am indebted to Mr. F. J. Keeley for sketches from which some of the drawings are made.